

Work Order ID 72859



Page 1

Tuesday, August 16, 2011 4:06:29 PM

Item ID: D205-634-041

Accept



Setup Start



Revision ID:

Stop



Item Name: Replacement Skidtube

Start Date: 8/16/2011 Start Qty: 1.00



Cust Item ID:

Required Date: 9/6/2011 Req'd Qty: 1.00



Customer:

Reference:

Approvals: Process Plan:

Date: 11-08-16

Tooling:

Date:

Run Start



QC:

Date:

SPC (Y/N):

Date:

Stop



Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

Draw Nbr

Revision Nbr

D2580-041

Rev.D DEO-D1

100

0.00



DC

DOCUMENT CONTROL

Memo

0.00

Document Control

Photocopy D205-634 bluefile & type labels per PPP D205-634-041 CHG002

Sukoln

HJG MLJ 11-10-19

110

0.00



CNC Bend I

BENDING MACHINE - SKIDTUBES

Memo

0.00

CNC Delta 100 Bender

1-Bend as per program D2580.C on CNC Bender and Folio 16

2-Cut tubes as per Dwg. D2580

3- scribe batch# in aft end of tube

DP

11-9-13

72859

Dart Aerospace Ltd

W/O:		WORK ORDER CHANGES					
DATE	STEP	PROCEDURE CHANGE	By	Date	Qty	Approval Chief Eng / Prod Mgr	Approval QC Inspector

Part No: _____ PAR #: _____ Fault Category: _____ NCR: Yes No DQA: _____ Date: _____

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Run Start



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Stop



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Sequence ID/
Work Center IDOperation
DescriptionSet Up/
Run Hours

Tool ID

Tool #

Plan
CodeAccept
QtyReject
QtyReject
NumberInsp.
Stamp

120

0.00



Skidtubes

Memo

0.00

Skidtubes

1- Deburr ends and remove bending marks

2- Prepare tube for welding as per QSI 004

De
11/09/12

130

QC5- Inspect part completeness to step on W/O

0.00



QC

Memo

0.00

Quality Control

1 *0* *BE 11/10/05*

Dart Aerospace Ltd

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Stop



QC: Date: SPC (Y/N): Date:

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

140

0.00



Skidtubes

Skidtubes

Memo

0.00

1-Weld step D2576 as per Dwg. D2580 and QSI-004
A/R Aluminum Rod

11/10/05

2-Grind welds on step as per Dwg D2580

SAD 11-10-11

3-Weld spacers as per dwg D2580

BE 11/10/11

3- *** N/A**** Insert D4202-1 spacer, swage as per QSI002 and trim/ grind
flush per QSI002 and dwg. Hold x-bolt with DT9701 Use tube expander 1/2
x17G to start expansion and finish with 1/2 x 18G to achieve dwg dimension.

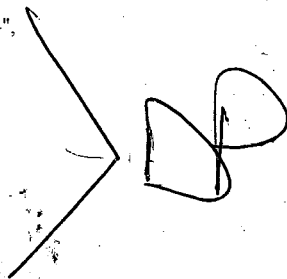
N/A

4-Drill holes for wearplates using DT 8217 & DT8937 Open holes to 19/64",
adjust stopper not to hit web. Debur

6-Drill pilot holes for aft cap using DT 8215 Open holes to 0.208". Debur

7-Drill pilot holes for Tow ring using DT8091, open to .640" and Debur

checked



11-10-11

Dart Aerospace Ltd

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QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
150 QC Quality Control	QC10- Inspect visual per QSI004- ground welds Memo	0.00 0.00							
			8/16/13						
160 QC Quality Control	QC5- Inspect part completeness to step on W/O Memo	0.00 0.00							
			8/16/13						
170 HandFinish Hand Finishing	Pressure Wash per QSI005 4.3 Memo Re-alodine tube as per QSI 005 section 4.1.2.1 do not acid etch and leave fwd cap out of solution.	0.00 0.00							

IXP m-f 11/10/13

Dart Aerospace Ltd

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Page 5

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Run Start

Approvals: Process Plan: Date: Tooling: Date:

Stop

QC: Date: SPC (Y/N): Date:

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

180

White Gloss(Ref.4.3.5.1) per QSI005 4.3-Alum

0.00



Powdercoat

Powder Coating

Memo

START TIME:

OVEN TEMPERATURE:

FINISH TIME:

4:00 0.00
3200 F
4:30

1X0 AM 11/10/13

190

QC3- Inspect Part Finish

0.00



QC

Quality Control

Memo

0.00

1 BL 11-10-17.

Dart Aerospace Ltd

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Page 6

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Customer:

Reference:

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Stop



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

Sequence ID/
Work Center ID

Operation
Description

Set Up/
Run Hours

Tool ID

Tool #

Plan
Code

Accept
Qty

Reject
Qty

Reject
Number

Insp.
Stamp

200

0.00



HandFinish

Hand Finishing

Memo

0.00

1-Install inserts & wearplates & Gaskets as per Dwg. D2580. Use a drop of Sikaflex on insert holes before installing wearplates
A/R ☐ ☐ ☐ Sikaflex-291 ☐ 118393 ☐ ☐
Sikaflex expire date: 10-5-

2-Coat D2594-3 O' rings with Petroleum Jelly and install on D2594-1 plugs as per Dwg D2580

3-Inspect for foreign object per QSI 024

4-Install 2855 Aft Cap as per Dwg D2580 and seal Fwd Step & Aft Cap with Sikaflex. Clean excess adhesive
A/R ☐ ☐ ☐ Sikaflex-291 ☐ 118393 ☐ ☐
Sikaflex expire date: 10-5-

5-Wing Walk as per Dwg D2580 and QSI 005 4.4
Batch: 118988

1 BL 11-10-17.

Dart Aerospace Ltd

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Page 7

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Required Date: 9/6/2011 Req'd Qty: 1.00



Customer:

Reference:

Run Start



Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____

Stop



QC: _____ Date: _____ SPC (Y/N): _____ Date: _____

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--------------------------------	--------------------------	----------------------	---------	--------	--------------	---------------	---------------	------------------	----------------

210

QC5- Inspect part completeness to step on W/O

0.00



QC

Memo

0.00

Quality Control

Inspect Aft Cap, Fwd Step and Wing Walk of work to Current Step Inspect for Foreign objects per QSI 024

220

Packaging

0.00



Packaging

Memo

0.00

Packaging

Identify and pack for shipping as per PPPD205-634-041
Location: _____
PPP Rev: _____

230

QC21- Final Inspection - Work Order Release

0.00



QC

Memo

0.00

Quality Control

*11/10/15**11/10/20**ME**11-10-19*

Dart Aerospace Ltd

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Tuesday, August 16, 2011 4:06:33 PM




Page 1

Parent Item Name: Replacement Skidtube

Required Date: 9/6/2011

Required Qty: 1.00

Comments: IPP Rev:N 02.08.28 FP was QC5 in Step 27; Added QC5 to Step 30
KJ IPP Rev P 10.02.19
per PAR09-043 EC verified by:DD
IPP Rev. O 06.02.28 Added paperwork EC
IPP Rev:P 07-07-09 SS Wearplates & Gaskets JLM IPP Rev:Q
10.12.01 as per chg003 DD verf:EC

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
D4202-1  Spacer	D2579	Manufactured	No			140	Each	443.0000	20	20		BE 11/10/05	
				<u>Location</u>		<u>Loc Qty</u>		<u>Loc Code</u>					
				LG002		443							
				66929		106							
				67129		196							
				67308		1							
				67430		140							
D2580-1  205 Skidtube bent detail		Manufactured	No			110	Each	1.0000	1	1			
				<u>Location</u>		<u>Loc Qty</u>		<u>Loc Code</u>					
				LG		1							
				71014		1							
D2576-3  Step (maching detail)		Manufactured	No			140	Each	30.0000	1	1		BE 11/10/05	
				<u>Location</u>		<u>Loc Qty</u>		<u>Loc Code</u>					
				LG		30							
				66156		30							

Dart Aerospace Ltd

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Picklist Print

Tuesday, August 16, 2011 4:06:34 PM

Page 2

Work Order ID: 72859

Parent Item: D205-634-041

Parent Item Name: Replacement Skidtube

Start Date: 8/16/2011

Required Date: 9/6/2011

Start Qty: 1.00

Required Qty: 1.00

D2855

Manufactured

No

200

Each

32.0000

1

1



Cap



BR 11-10-17.

Location

Loc Qty

Loc Code

FP007

32

65519

2

65569 ✓

30

AN3-5A

Purchased

No

200

Each

737.0000

2

2



Bolt



BR 11-10-17.

Location

Loc Qty

Loc Code

ST350

737

115371

46

117423 ✓

691

AN960JD10L

NAS1149D0332J Purchased

No

200

Each

0.0000

2

2



Washer



BR 11-10-17.

ALS7-1032-130

Purchased

No

200

Each

1,155.000

50

50



Insert



BR 11-10-17.

Location

Loc Qty

Loc Code

ST282

1155

117717

899

118386

256

Tuesday, August 16, 2011 4:06:34 PM

Shop Packet Print

Page 2

Dart Aerospace Ltd

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Tuesday, August 16, 2011 4:06:34 PM

Page 3

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Parent Item: D205-634-041

Parent Item Name: Replacement Skidtube

Start Date: 8/16/2011

Required Date: 9/6/2011

Start Qty: 1.00

Required Qty: 1.00

AN3C4A

Purchased

No

200

Each

1,361.000

50

50



BOLT



BR 11-10-17.

Location

Loc Qty

Loc Code

ST350

1361

117313

2

117688

36

117795

1

117872

22

118012

260

118112

40

118451 ✓

1000

50

AN960C10L

* NAS1149C0332 ✓
R

Purchased

No

200

Each

0.0000

50

50



washer

D3566-13



Gasket

118354.



50

BR 11-10-17.

Manufactured

No

200

Each

27.0000

1

1



BR 11-10-17

Location

Loc Qty

Loc Code

FP

8

69281

8

FP014

19

68341

1

72149 ✓

18

200

Each

8.0000

1

1

D3566-5



Gasket



BR 11-10-17

Location

Loc Qty

Loc Code

FP015

8

68961

1

71601

7

72849

1

Tuesday, August 16, 2011 4:06:34 PM

Shop Packet Print

Page 3

Dart Aerospace Ltd

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Start Date: 8/16/2011

Required Date: 9/6/2011

Start Qty: 1.00

Required Qty: 1.00

D3566-1

Manufactured No

200

Each

8.0000

2

2



Gasket

Location

Loc Qty

Loc Code

FP011

73303

6

71580

6

FP015

2

68924

2

2.

BK 11-10-17.

D3564-11

Manufactured No

200

Each

18.0000

1

1



Wearshoe

Location

Loc Qty

Loc Code

FP019

4

67591

4

FP020

14

72207

14

1

BK 11-10-17.

D3564-13

Manufactured No

200

Each

12.0000

1

1



Wearshoe

Location

Loc Qty

Loc Code

FP016

72850

6

69280

6

FP017

6

71594

6

1.

BK 11-10-17.

Dart Aerospace Ltd

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Start Date: 8/16/2011

Required Date: 9/6/2011

Start Qty: 1.00

Required Qty: 1.00

D3564-9

Manufactured No

200

Each

20.0000

1

1



Wearshoe



BR 11-10-17.

Location

Loc Qty

Loc Code

FP019

73 345.

6

67590

4

69943

2

FP020

14

72208

14

D3564-5

Manufactured No

200

Each

18.0000

1

1



Wearshoe



BR 11-10-17.

Location

Loc Qty

Loc Code

FG

73330 ..

2

34806

2

FP019

16

70864

4

72164

12

D2594-3

Manufactured No

200

Each

612.0000

16

16



O-Ring, 205 Skidtube



BR 11-10-17.

Location

Loc Qty

Loc Code

FP-A

612

65518

41

66952 ✓

571

16.

Dart Aerospace Ltd

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Page 6

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Parent Item Name: Replacement Skidtube

Start Date: 8/16/2011

Required Date: 9/6/2011

Start Qty: 1.00

Required Qty: 1.00

D2594-1

Manufactured No

200

Each

306.0000

16

16



Plug, 205 Skidtube



PL 11-10-17.

Location

Loc Qty

Loc Code

FP-A

306

42807

28

67441

7

68943

70

72127 ✓

201

16.

Tuesday, August 16, 2011 4:06:34 PM

Shop Packet Print

Page 6

Dart Aerospace Ltd

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DESIGN <i>[Signature]</i>	DRAWN BY <i>[Signature]</i>	DART AEROSPACE LTD HAWKESBURY, ONTARIO, CANADA	
CHECKED <i>[Signature]</i>	APPROVED <i>[Signature]</i>	DRAWING NO. D2580	REV. D SHEET 1 OF 3
DATE 07.02.27		TITLE 205 SKIDTUBE ASSEMBLY	SCALE NTS
A	96.09.16	NEW ISSUE	
B	96.12.02	AS MANUFACTURED	
C	98.08.26	REDRAWN, INCLUDED DEO 9094/9097	
D	07.02.27	CHANGE TO SS WEARPLATES AND GASKETS, INCLUDE DEO 9124/9183	

RELEASED
07.06.28 *[Signature]*

DEO ATTACHED
UNDER REVIEW

Photo
RMV *P. 11.06.70*

QTY -041	QTY -045	Part Number	Description
X		D2580-041	SKIDTUBE ASSEMBLY
	X	D2580-045	SKIDTUBE ASSEMBLY
1	1	D2500-1-190	EXTRUSION
1	1	D2576-3	STEP
20	24	D2579	CROSS BOLT SPACER
16	16	D2594-1	PLUG
16	16	D2594-3	O-RING
1	1	D2596	205 WEB
1	1	D2855	AFT CAP
1	1	D3564-5	WEARSHOE
1	1	D3564-9	WEARSHOE
1	1	D3564-11	WEARSHOE
1	1	D3564-13	WEARSHOE
2	2	D3566-1	GASKET
1	1	D3566-5	GASKET
1	1	D3566-13	GASKET
50	50	ALS7-1032-130 or AKS7-1032-130 or AKS4-1032-130 or AELS-1032-130	INSERT
50	50	AN3C4A	BOLT
2	2	AN3-5A	BOLT
50	50	AN960C10L	WASHER
2	2	AN960JD10L	WASHER

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WORK ORDER
NO *72859*

P. 11-08-16

GENERAL NOTES:

- 1) TOLERANCES ARE PER DART QSI 018 UNLESS OTHERWISE NOTED
- 2) ALL DIMENSIONS ARE IN INCHES
- 3) INSERT D2596 WEB TO LOCATION SHOWN OFF AFT END OF SKIDTUBE AND BOND WEB INTO OUTER TUBE WITH NON-STRUCTURAL SIKAFLEX-241 ADHESIVE PER DART QSI 015 BEFORE BENDING. ENSURE HOLES LINE-UP.
- 4) BEND AS A SMOOTH RADIUS STARTING WITH A MAXIMUM CENTERLINE RADIUS OF 60 AND ENDING WITH A MINIMUM RADIUS OF 30. A MAXIMUM REDUCTION OF 0.200 IN DIAMETER IS ALLOWABLE IN THE BENT PORTION OF THE TUBE.
- 5) USE DART DRILL TEMPLATE TD2577-205 TO LOCATE AND DRILL Ø0.297 HOLES FOR WEARSHOE INSERTS. INSTALL ALS7-1032-130 PER SECTION D-D (50 PLACES) AFTER FINISH. INSTALL AN3C4A BOLTS AND AN960C10L WASHERS WITH SIKAFLEX-241/-291.
- 6) WELDING TO BE DONE PER DART QSI 004.
- 7) FINISH:
SEE NOTES ON
PAGE 2 FOR D2580-041 AND
PAGE 3 FOR D2580-045
- 8) INSERT D2594-1 PLUG C/W D2594-3 O-RING IN HOLES MARKED 'P' (BOTH SIDES OF TUBE) AFTER FINISH (16 PLACES).

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12859

Diagram illustrating the grinding locations and features on the propeller cross-section:

- GRIND FLUSH (4 PLACES)
- GRIND FLUSH
- D2576-3 STEP
- GRIND FLUSH
- LOCATION RIDGE ON UNDERSIDE OF D2576
- $\frac{1}{4}$

RELEASED
07-06-28

RMV 411.06.30

Diagram of a wheel assembly with labels:

- D2579 SPACER
- D2596 WEB (REF)
- ALS7-1032-130 (REF) (TYP 50 PLACES)
- AFTER PERFORM
 1. CHA
 2. INS
 3. WEI
 4. C'B

AFTER DRILLING AND BENDING ASSEMBLY
PERFORM THE FOLLOWING FOR #0.508 HOLES ONLY:

1. CHAMFER HOLE 0.050 X 45°
2. INSERT D2579 SPACER (20 PLACES)
3. WELD INTO PLACE AND GRIND FLUSH
4. C-BORE D2579 SPACER TO $\phi 0.437 \times 1.00$ DEEP

i) FINISH: ACID ETCH, ALODINE PER DART QSI 005 4.1 PRIOR TO INSERTING D2596 WEB POWDER COAT ASSEMBLY GLOSS WHITE (REF. 4.3.5.1) PER DART QSI 005 4.3 BLACK ANTI-SKID PAINT AS INDICATED PER DART QSI 005 4.4

37.50
DISTANCE TO AFT END
OF D2596 WEB

3
7

1.750 1.750

#0.508 (TYP.)
(40 PLACES)

REFER TO DETAIL A

8.750 17.375 26.000 34.188

57.313 (REF)
7 EQUAL SPACES
8.188 PITCH

38.0 91.500 190.0
(D2500-1)

CP 11.06 30

RMV 4.06.3

[illegible]

WELD AS PER DETAIL B

BLACK ANTI-SKID TO 0.5 ABOVE LOCATION RIDGE

BLACK ANTI-SKID TOP OF STEP TO 0.5 ABOVE BOTTOM EDGE

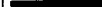
0.5 1.5 1.5 D

REFER TO DETAIL C

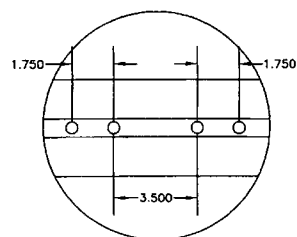
D3566-1 D3566-5 D3566-13 D3564-11 D3564-5 D3564-9 D3564-13

AN3C4A BOLT (1)
AN560C10L WASHER (1)
(50 PLACES)

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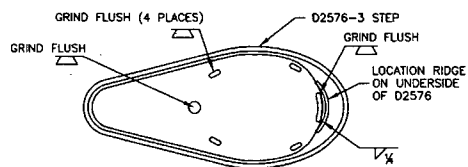
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	CHECKED	APPROVED	DRAWING NO.	REV.	
			D2580	SHEET 2 OF	
DATE	TITLE		SCALE		
07.02.27	205 SKIDTUBE ASSEMBLY		1:2		

DETAIL E
SCALE 5:24

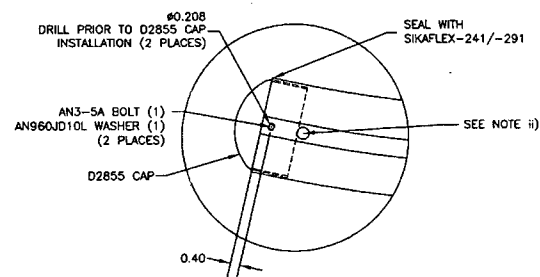


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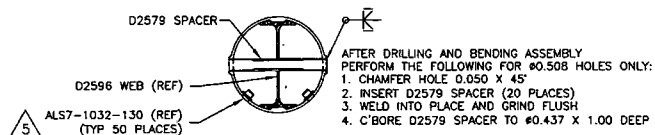
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SCALE 5:24



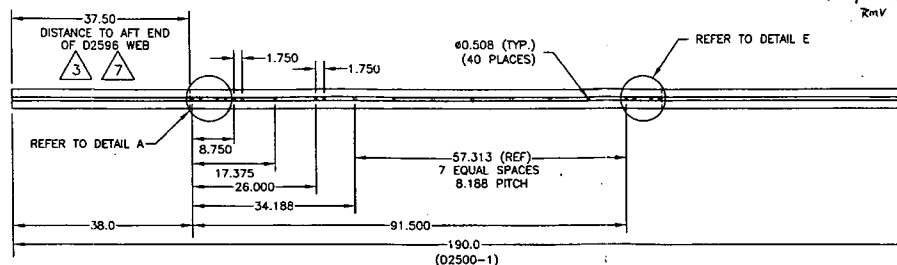
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SCALE 5:24



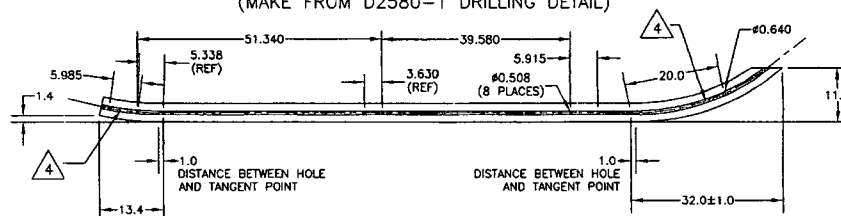
SECTION H-H
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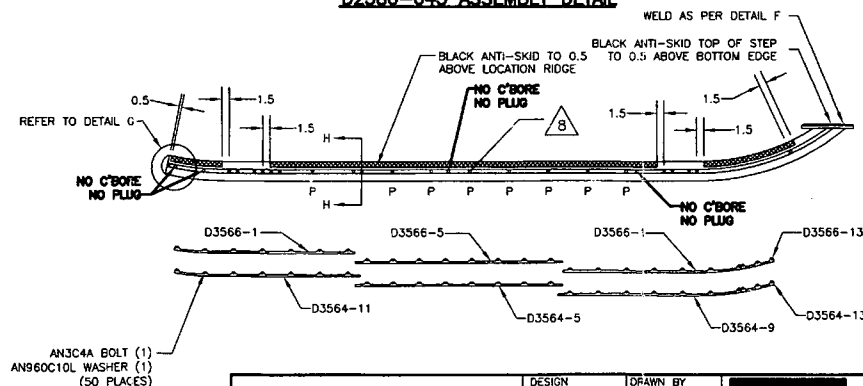
D2580-1 DRILLING DETAIL



D2580-5 BENDING AND CUTTING DETAIL
(MAKE FROM D2580-1 DRILLING DETAIL)



D2580-045 ASSEMBLY DETAIL



D2580-045 NOTES

- i) FINISH: ACID ETCH, ALODINE PER DART QSI 005 4.1 PRIOR TO INSERTING D2596 WEB
POWDER COAT ENTIRE ASSEMBLY GREEN (REF. 4.3.5.8) PER DART QSI 005 4.3
BLACK ANTI-SKID PAINT AS INDICATED PER DART QSI 005 4.4
- ii) IT IS ACCEPTABLE TO GRIND A RELIEF IN THE D2855 AFT CAP TO PREVENT INTERFERENCE WITH THE SPACER AT THIS LOCATION

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CHECKED H	APPROVED H	DRAWING NO. D2580	REV. C SHEET 3 OF 3
DATE 07.02.27	TITLE 205 SKIDTUBE ASSEMBLY	SCALE 1:24	

NO. 271

AWS D17.1.2001
QUALIFICATION TEST RECORD

Name: Barclay Elliott
Job number: 72859
Part number: 1 205 - 634 - 041
Description: 205 Skid tube
Welding Process: Tig ☒ Mig ☐
Base material: Aluminium
Current: AC ☒ DC ☐

TEST REQUIREMENTS AND RESULTS

Visual: pass ☒ fail ☐
Penetration: pass ☒ fail ☐

UNACCEPTABLE

Cracks: pass ☒ fail ☐
Undercut: pass ☒ fail ☐
Pin holes: pass ☒ fail ☐
Overlap (cold lap): pass ☒ fail ☐
Porosity (surface): pass ☒ fail ☐
Coloration: pass ☒ fail ☐

Qualifier Pat Lum Date of Test Coupon 11-10-12
Welder Barclay Elliott Date of Test Coupon 11-10-12

The above named individual is qualified in accordance with AWS D17.1.2001 to weld